

AMENDMENTS TO THE CLAIMS:

Please amend claims 1, 7, 11, 17 and 20, as shown below. This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method comprising:
storing data objects as nodes in a directed graph; and
storing path information for a first object corresponding to a first node, where the path information ~~comprises a sequence of nodes~~ provides relational information about a direct path through the directed graph between the first node and a second node, where the second node is separated from the first node in the sequence of nodes along the direct path by at least a third node.
2. (Original) The method of claim 1 further comprising:
accepting a query regarding the first node;
locating the first object; and
accessing the path information to respond to the query.
3. (Original) The method of claim 1 wherein storing data objects comprises:
storing each data object in a first column of a data table; and
storing a relation of the first data object to a consecutive data object in a second field of the data table, where the consecutive data object is connected to the first data object in the directed graph by a single edge.
4. (Original) The method of claim 3 wherein storing path information comprises storing the path information in a third field of the data table.

5. (Original) The method of claim 1 wherein storing path information comprises storing a data string as the path information, where the data string includes at least the second node and the third node.
6. (Original) The method of claim 5 comprising comparing the data string to a query regarding the first node, in order to respond to the query.
7. (Currently Amended) The method of claim 5 wherein storing the data string comprises:
determining a first sequence of nodes ~~direct-path~~ through the directed graph of which the first node is a part;
determining a first data string based on the first sequence of nodes ~~direct-path~~;
determining a second sequence of nodes ~~direct-path~~ through the directed graph of which the first node is a part;
determining a second data string based on the second sequence of nodes ~~direct-path~~; and
concatenating the first data string and the second data string for storing as the path information.
8. (Original) The method of claim 1 wherein storing path information comprises transforming the relational information into a coded value.
9. (Original) The method of claim 1 wherein the directed graph includes a hierarchical, multi-leveled data structure.
10. (Original) The method of claim 1 wherein storing path information comprises updating the path information to reflect changes in the directed graph.
11. (Currently Amended) An apparatus comprising a storage medium having instructions stored thereon, the instructions ~~including~~ comprising:

a first code segment for storing data objects within a table;
a second code segment for storing a relation of a first data object to a second data object in the table, where the first data object and the second data object correspond to consecutive nodes on a directed graph; and

a third code segment for storing path information associated with the first data object in the table, where the path information comprises a sequence of nodes ~~describes a path~~ within the directed graph that is between the first node, the second node, and a third node.

12. (Original) The apparatus of claim 11 further comprising:

a fourth code segment for accepting a query about the first node and a possible relation of the first node to another node within the directed graph; and

a fifth code segment for responding to the query based on the path information.

13. (Original) The apparatus of claim 12 wherein the fifth code segment includes a sixth code segment for detecting the first data object within the table and comparing the path information to the query.

14. (Original) The apparatus of claim 11 wherein the first data object, the second data object, and the path information are stored in separate columns of a single row of the table.

15. (Original) The apparatus of claim 11 wherein the third code segment stores the path information as a data string listing the second node and the third node.

16. (Original) The apparatus of claim 11 wherein the third code segment stores the path information as a coded value generated from information about the second and third node and their locations within the directed graph.

17. (Currently Amended) A system comprising:
means for accessing path information comprising a sequence of nodes through that
~~describes a path through~~ a directed graph between a first node and a plurality of other nodes; and
means for responding to a query involving the first node, based on the path information.
18. (Original) The system of claim 17 wherein the means for accessing path information
comprises means for storing the path information or a reference to the path information in a table
containing a first data object corresponding to the first node.
19. (Original) The system of claim 17 wherein the means for responding to the query
comprises means for directly locating the first data object within the table in response to the
query.
20. (Currently Amended) The system of claim 19 wherein the means for responding to the
query comprises means for performing a pattern match between the query and a data string
listing the sequence of nodes ~~path through~~ the directed graph.